June 23, 1936. C. E. KYTE ET AL 2,045,089

EXPANSION JOINT

Filed Aug. 30, 1933

Fig. 1.

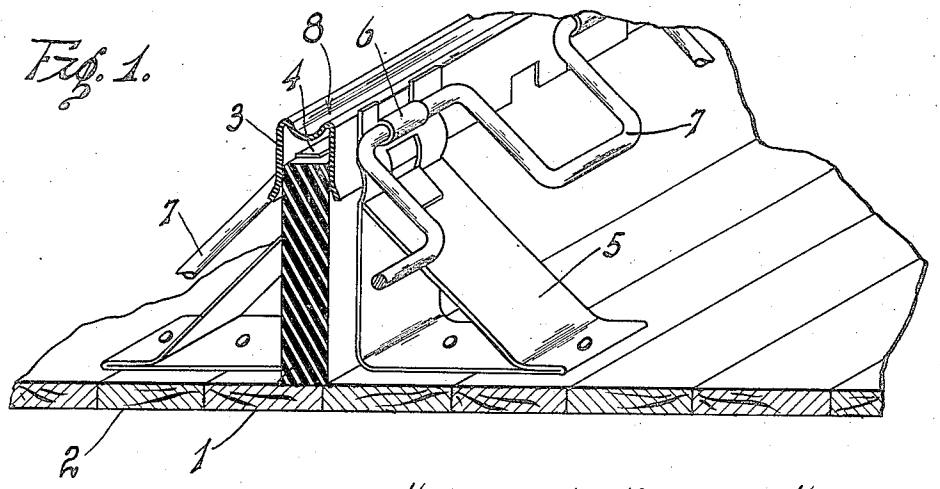


Fig. 2.

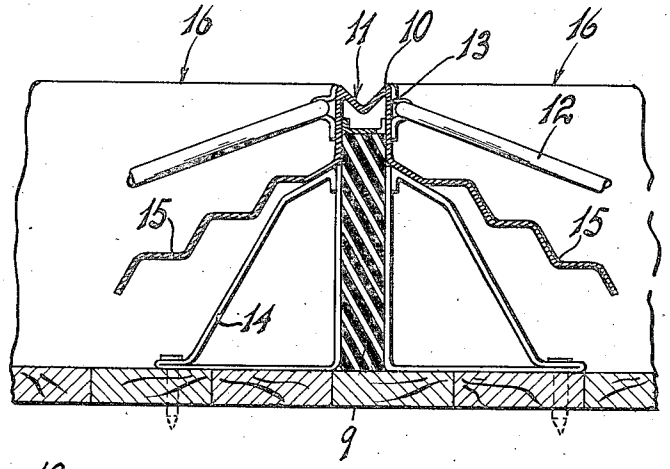


Fig. 3.

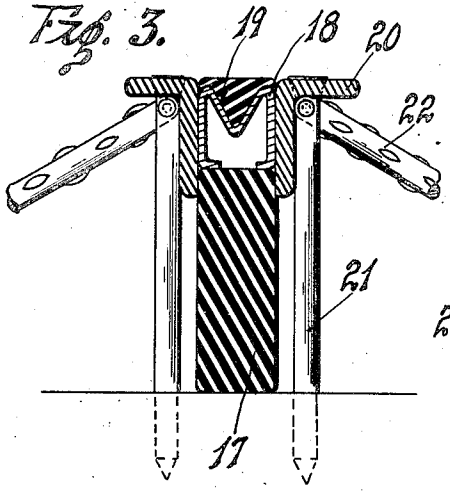
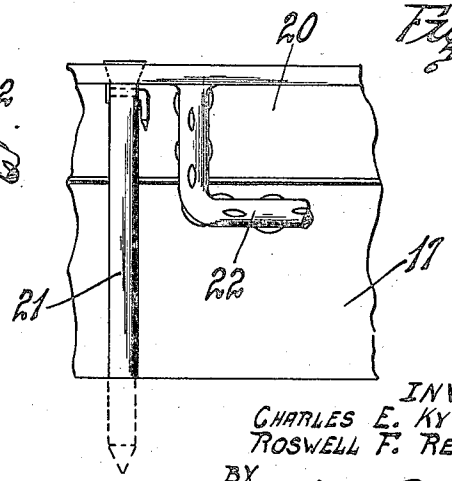


Fig. 4.



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EXPANSION JOINT

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Santa Ana, Calif.

Application August 30, 1933, Serial No. 687,442

5 Claims. (Cl. 94—18)

This invention relates to an expansion joint for concrete slabs, such as walks, curbs, roads, floors, etc.

The prime object of our invention is to provide a novel anchor for the joint so that it will follow the edges of the concrete slab, thus always remaining closed so that no foreign matter can enter the joint.

Another object is to provide an expansion joint which can also be used as a screed while the concrete is being poured.

Still another object is to provide a groove on the top of the joint to eliminate the use of a marking tool on the surface of the finished concrete. This groove is so designed that it will never fill with hard material, as there is no place for the material to wedge.

A feature of our joint is that it can be used in either horizontal or vertical positions, is simple to install, and effective in use.

In the drawing

Figure 1 is a fragmentary perspective view of our joint.

Figure 2 is a transverse sectional view of a slightly modified form of joint.

Figure 3 is a transverse sectional view of another modified form of joint.

Figure 4 is a fragmentary side view of the modification shown in Fig. 3.

It is the tendency of asphalt and felt joints used at the present time, to squeeze out, due to the constant contraction and expansion of the concrete slabs. When the concrete contracts, it allows hard material to enter the joint and when it expands, it compresses this foreign material. By a continual repetition of this opening and closing, the original asphalt or felt joint will be expelled, leaving a hard, inelastic joint. This causes failure of the concrete—such as spalling of the edges along the joint, buckling an irregular surface, cracking of the concrete slab, etc. All of this difficulty is attributable to hard, foreign matter entering the joint.

Referring more particularly to the drawing, the numeral 1 indicates a joint strip formed of felt, asphalt, or other plastic material. This joint strip rests upon the base 2 which can be the ground, a wooden floor, a structural steel member, or the like.

A metallic rider 3 is positioned on top of the strip 1 and extends the entire length of said strip. The finished concrete surface is flush with the top of the rider 3. Consequently, said rider is used as a screed in finishing the concrete surface.

The rider 3 is provided with a plurality of inwardly extending lips 4 which rest on top of the strip 1. These lips are preferably cut out of the metal forming the rider, and are then bent inwardly so as to provide a stop for said rider. The sides of the rider 3 closely fit the sides of the strip 1 and extend downwardly below the top surface of the strip.

The rider 3 is further supported by a plurality of brackets 5. These brackets are secured to the base in suitable manner, such as by nails, clamps, or the like. The brackets 5 are welded, or otherwise suitably attached to the side of the rider 3. Each of the brackets is formed with a sleeve 6 which is adapted to receive a heavy wire 7. This wire is bent outwardly between its supports in the sleeve, so as to become embedded in the concrete slab. Once the concrete has set, the wire 7 will cause the rider 3 to expand and contract with the concrete, thus maintaining a tight joint at all times. To permit of this contraction and expansion in the rider 3, we provide a groove 8 in the top thereof. The metal of the rider will flex in the groove 8, thus allowing the sides of said rider to closely follow the edge of the concrete. Obviously, a tight joint will thus be maintained. The groove 8 is relatively shallow and the sides are smooth so that foreign material cannot become wedged therein. If desired, this groove can be filled with a plastic material, such as asphalt.

In the form shown in Fig. 2, the expansion strip 9 has a metal rider 10 on the top thereof—the same as previously described. This rider has a recess or groove 11 formed therein, and the sides of the rider are coupled to the concrete slabs on each side by means of wires 12 which are embedded in the concrete. The wires 12 are attached to the sides of the rider 10 by means of clips 13. The rider is supported upon the strip 9 by means of brackets 14 which brackets rest on the foundation.

In this type of joint, it is sought to eliminate the percolation or seepage of water downwardly along the edges of the joint. To overcome this, we provide a corrugated apron 15 on each side of the rider 10, and preferably integral therewith. This corrugated apron extends outwardly at an angle from the lower edges of the rider and is embedded in the concrete. With this arrangement, the expansion strip, the supporting brackets, and the like, are protected against the seep-

age of water which would deteriorate the same, or might freeze and thereby disrupt the joint. The top level of the concrete slabs is indicated at 16.

In Figs. 3 and 4, we have shown a construction applicable to roads which are required to carry heavy traffic. The expansion strip 17 has a rider 18 resting on the top. This rider has a groove 19 formed therein for the same purpose, as previously described. To each side of the rider 18 is welded or otherwise suitably secured, a structural angle 20. The angles are supported by a plurality of spaced pins 21 which extend thru the top of the angle and are driven into the foundation.

A plurality of bars 22 are secured to the side of the angles, and extend into the concrete slab. These bars act as the bond between the angles and the concrete, causing the angles and the rider 18 to move with the slab.

Having described our invention, we claim:

1. An expansion joint for concrete structures comprising an expansion strip, a metal rider resting on the top of said strip, said rider having a groove in the top thereof, brackets attached to the sides of the rider, a sleeve on the brackets, and a wire threaded thru the sleeves and embedded in the concrete.

2. An expansion joint for concrete structures comprising an expansion strip, a metal rider resting on top of the strip, said rider being closed across the top thereof, a structural angle attached to each side of the rider, and bars secured to the angles and embedded in the concrete.

3. An expansion joint for concrete structures comprising an expansion strip, a metal rider resting on top of the strip, a structural angle attached to each side of the rider, bars secured to the angles and embedded in the concrete, and supporting means for said angles.

4. An expansion joint for concrete structures comprising an expansion strip, a metal rider resting on the top of the strip, a plurality of inwardly extending lips on the rider, said lips resting on the top of the expansion strip, and means fixedly attached to the rider adjacent the top thereof and extending into the concrete whereby the rider is caused to move with the concrete.

5. An expansion joint for concrete structures comprising an expansion strip, a metal rider resting on the top of the strip, a plurality of inwardly extending lips on the rider, said lips resting on the top of the expansion strip, and means fixedly attached to the rider adjacent the top thereof and extending into the concrete whereby the rider is caused to move with the concrete, said rider having a groove formed in the top thereof.

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